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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/512,408

10/21/2004

Yoshihiro Mushika

10407-115US
(A3115MT-US1)

4621

570

7590

11/15/2006

EXAMINER

AKIN GUMP STRAUSS HAUER & FELD L.L.P.
ONE COMMERCE SQUARE
2005 MARKET STREET, SUITE 2200
PHILADELPHIA, PA 19103

LEE, HWA S

ART UNIT

PAPER NUMBER

2877

DATE MAILED: 11/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<p align="center">Office Action Summary</p>	<p>Application No.</p> <p align="center">10/512,408</p>	<p>Applicant(s)</p> <p align="center">MUSHIKA, YOSHIHIRO</p>	
	<p>Examiner</p> <p align="center">Andrew Hwa S. Lee</p>	<p>Art Unit</p> <p align="center">2877</p>	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☐ Claim(s) 1,4,8-13,16-18,20 and 21 is/are rejected.
- 7) ☒ Claim(s) 2,3,5-7,14,15,19 and 22 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>11/15 10/21/04</u> | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1,4,8-13,16-18,20 and 21 rejected under 35 U.S.C. 103(a) as being unpatentable over Nelson et al (US 4,725,144).

Nelson et al (Nelson hereinafter) show optical element testing comprising:

a deformable mirror (16) for modulating the phase of incoming light;

a photodetector (32) having a plurality of photosensitive areas to receive the light of which the phase has been modulated by the deformable mirror;

a photosensor (63, 68) selecting section for selecting at least one of the photosensitive areas and activating the selected photosensitive area effectively; and

a modulation control (63, 68, and also please see for example, column 3, lines 4+) section for providing a modulation pattern, associated with the photosensitive area that has been selected by the photosensor selecting section, for the deformable mirror.

Nelson does not expressly state that the deformable mirror is a spatial light modulator, but as disclose by Applicant, a deformable mirror is a spatial light modulator therefore the claim

limitation of a spatial light modulator is met.

With respect to claim 4, the spatial light modulator is arranged on an optical path of an imaging optical system.

With respect to claim 8, the imaging optical system selectively exhibits one of multiple types of imaging characteristics (fringes), and wherein the optical detection system further includes an imaging information sensing section (63, 68) for sensing information about the imaging characteristic that has been selected from the multiple types of imaging characteristics, and wherein in accordance with the output of the imaging information sensing section, the modulation control section provides a modulation pattern, which produces an appropriate imaging ability, for the spatial light modulator (e.g. column 4, lines 27-65).

With respect to claim 9 the imaging characteristic is an imaging magnification since the image would not be the same size as the mirror 14a.

With respect to claim 10, the modulation control section provides a modulation pattern (no limitation to "pattern" is defined so any pattern, including random, would meet the limitation), which deviates the incoming light that has entered at least a portion of the spatial light modulator out of the photosensitive area selected, for the spatial light modulator.

With respect to claim 11 the modulation control section provides a modulation pattern, which changes the area of that portion of the spatial light modulator, for the spatial light modulator.

With respect to claim 12, the modulation control section selectively provides either a first modulation pattern, which makes the area of that portion of the spatial light modulator relatively large ("relatively large" is not defined in the claim so any size would meet the claimed limitation) , or a second modulation pattern, which makes the area of that portion of the spatial light modulator relatively small, for the spatial light modulator, and controls the respective durations of the first and second modulation patterns.

With respect to claim 13, the light that has been deviated out of the photosensitive area selected is incident on another photosensitive area of the photodetector (beamsplitter deviates light where the deformable mirror reflect the light back to the detector at a different region.).

With respect to claim 16, the spatial light modulator is a deformable mirror.

With respect to claim 17, the deformable mirror includes: a plurality of light reflecting areas that are arranged on a substrate (38); and an actuator (pzt) for displacing the light reflecting areas at least perpendicularly to the substrate.

With respect to claim 18, the deformable mirror is coupled to multiple actuators (pzt) that are associated with the respective light reflecting areas, and wherein by driving the actuators independently of each other, the light reflecting areas are displaced perpendicularly to the substrate and/or tilted with respect to the substrate.

With respect to claim 20, each of the photosensitive areas of the photodetector includes a photoelectric modulating section (photoelectric converters such as photodiodes are inherent), and

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wherein the optical detection system further includes: a memory (63, 68) for storing the outputs of the photoelectric modulating section in the photosensitive area that has been selected by the photosensor selecting section; and a reconstructing section (63, 68) for reconstructing an overall image by rearranging the outputs stored in the memory.

With respect to claim 21, the photodetector is a storage medium, of which a physical property changes when exposed to a radiation. Although Nelson does not disclose a shutter member, shutters are well known and it would have been obvious to use a shutter in order to prevent and protect from unwanted light impinging on the detectors.

Allowable Subject Matter

3. Claims 2, 3, 5, 6, 7, 14, 15, 19, and 22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

4. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record fails to show or to suggest an optical sensor comprising all the elements as presently claimed in combination with the limitations of dependent claims 2, 3, 5, 6, 7, 14, 15, 19, and 22.

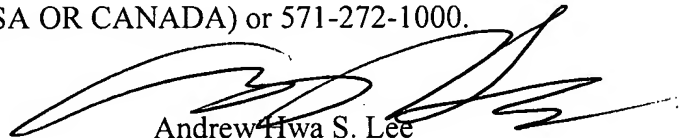
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Hwa S. Lee whose telephone number is 571-272-2419. The examiner can normally be reached on Tue-Fr.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley Jr. can be reached on 571-272-2800 ext 77. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Andrew Hwa S. Lee
Primary Examiner
Art Unit 2877